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MODERN WHEAT RAISING

Synopsis of Film

1. Modern Farming. Raising Wheat in Minnesota.
2. Spreading the Fertilizer.
3. Plowing Many Furrows at One Time.
4. Harrowing with Disk and Tooth Harrows to Prepare the Ground for the Seed.
5. Drilling Wheat. Machine Dropping and Covering the Seed Grains.
6. Fields of Growing Wheat.
7. Cutting, Binding, and Shocking the Wheat.
8. Threshing the Wheat. A Tractor Furnishes the Power which Runs the Threshing Machine.
9. A Caterpillar Tractor Drawing a Machine which Reaps, Threshes, and Sacks the Wheat.
10. Towing the Wheat to the Railroad.
11. Scenes at Duluth, Minnesota. Grain Elevators and Vessels.
12. Loading a Vessel with Grain. Conveying Wheat Through Pipes to the Hold.
13. Grain Vessels Leaving Duluth.
14. Flour Mills at Minneapolis.

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THE WHEAT INDUSTRY

WHEAT is the best known and most valuable of all cereal crops. The world's production for 1915 reached nearly four billion bushels, and was exceeded by only two other grains, corn and oats. In that year, the United States established a record with 1,011,505,000 bushels, leading Russia by 120,000,000 bushels. The estimates for 1916, however, placed the United States yield at 607,557,000 bushels, the smallest crop since 1911. About 60,000,000 acres are devoted to wheat raising, with the states of North Dakota, Kansas, Minnesota, Nebraska, and South Dakota ranking in the order named for the 1915 production. The Red River Valley contributed nearly 300,000,000 bushels.

Wheat assumes much of its importance from the fact that in the form of bread, crackers, macaroni, pastry, or breakfast food it constitutes nearly one-fifth of the total food of the average American family, furnishing approximately 27% of the protein, 6% of the fat and 46% of the carbo-hydrates. Unlike corn and oats, it is not generally used for feeding live-stock but almost exclusively for human consumption. A number of the by-products of the milling, such as bran and middlings are, however, excellent food-stuffs for farm animals.

Wheat is a hardy plant and different varieties of it are adapted to various conditions of soil and climate. The two general classes are known as winter wheat and spring wheat, according to the seasons when they are properly planted. Through the Canadian northwest, the Fife, a spring wheat, is extensively grown because of its adaptability to a cool climate and long summer sunlight.

The Durum is a winter wheat which has been raised successfully in many of the semi-arid regions of the United States. Both are excellent for milling purposes.

The preparation of the soil begins with plowing. This may be done on the small farm by a one-horse plow, turning a ten-inch furrow. On the larger farms four-gang or six-gang plows are used, each drawn by as many horses or by a gasoline tractor. On a 30,000 acre range a huge steam engine, mounted on broad-tired wheels, pushes its way for mile after mile, dragging not only fifteen or more eighteen-inch plows but also the necessary disk-harrows to smooth the ground and the drills for planting the seed. Thus in one process the soil is turned up, harrowed, seeded and rolled at a rate which may reach fifty acres in a day. As many as fifty-five plows have been assembled in one gang, each a little behind its neighbor on the right, and drawn by three large engines. By this combination fifty-five furrows have been turned at once, and an acre has been plowed in less than four minutes.

In the past the use of a fertilizer has not been common and the continued planting of wheat has impoverished the land, with an accompanying decrease in the yield per acre. The present practice is to rotate the crops. Alfalfa, clover, or beans are sown in the season following wheat, to restore to the soil the nitrogen removed by the wheat crop. The second year the cultivation of a crop of corn clears the ground of weeds, grass and lumps, that it may again be used in the third year for wheat.

Since wheat grows best during the cool weather of the spring and the early summer the spring crop must be planted early. A reasonable amount of rain until the berry is ripe is important for a successful yield. The stalks rise to a height of over five feet, each bearing a head of seventy-five to two hundred berries. As it ripens the wheat field changes to a golden yellow and stretches away

to the horizon like an endless sea, its surface in ceaseless motion rippling in the breeze.

Harvesting usually begins in Texas in the month of May and ends, even in the northern states, in the month of August. The scarcity of laborers has led to the adoption of self-binding reapers, which cut the stalks, gather them into bundles called sheaves, and tie and stand these sheaves in shocks.

It is not infrequent for from ten to twenty horse-drawn reapers to follow one another, cutting a swath a hundred feet in width and going from two to five miles before turning back. Thirty-five to seventy acres are reaped in a day and where tractors are in use the work does not always stop at sunset.

On many of the larger farms, a combined header and threshing machine is used, drawn by a large tractor. It clips the heads from the stalks, and threshes and deposits the sacked grain, while at the same time the straw is rebound and thrown aside. When horses are used, as many as forty must be attached to one of these machines.

It is a more common practice to gather the shocks of grain at some convenient place for threshing at the end of the harvest. The same traction engine that is used to draw the plows and the reapers, furnishes the power for the threshing machine. The wheat-berries are beaten out of the heads and the grain is separated from the straw and chaff; 2,000 bushels of threshed grain have often been the product of a day's work with one of these modern machines.

Common enemies of wheat are the rusts and the smuts which in the thresher give rise to quantities of very fine dry dust. A small spark, caused by the striking together of two pieces of metal, may be sufficient to ignite the dust with such explosive violence that it is impossible to prevent the destruction of the machine.

The farmer delivers his grain to the local elevator, situated by the railroad tracks. His sacks are emptied into a hopper from which the wheat is taken by the elevator proper, which is an endless belt with buckets attached, to the top of a box-like building three or four stories high, whence it passes through devices for cleaning and weighing as it descends to the proper storage bins by gravity. The loading of freight cars is done entirely by gravity through spouts from the bottoms of the bins.

The country elevators are usually of wood with a metal or brick exterior, but the enormous terminal elevators at the flour mills or shipping ports are fire proof structures of steel, concrete, or tile. The bins are cylindrical and are arranged in groups of from two to six or more beside a tall rectangular structure, containing the machinery for lifting and for other purposes.

The total capacity of the grain elevators at Chicago in 1914 was 45,400,000 bushels. The largest were the Armour Elevators that are capable of holding 5,000,000 bushels. Over 340,000,000 bushels of grain of all kinds passed through Chicago elevators during that year.

While the larger part of the wheat of the United States goes to the miller to be ground for home consumption, considerable is exported. In the year ending June 30, 1916, about 174,000,000 bushels and 15,500,000 barrels of flour, with a total valuation of $300,000,000, were shipped to other countries. Grain elevators are therefore common sights at such sea ports as Portland, Maine, Boston, New York, Philadelphia, Baltimore, and New Orleans. In 1915 New York received the vast total of 226,000,000 bushels of grain, mostly by rail from the grain fields of the middle and far west. Baltimore was an easy second in the amount received and Philadelphia third.

Questions, Topics, Suggestions

1. What is wheat? Where did it originate? Is it a native of America? How was it introduced?
2. Name some of the varieties of wheat. (See century dictionary article, "Wheat.")
3. Where is wheat cultivated? Name the countries in the order of production. Give the states in the order of production.
4. Where is the Red River Valley? In what states? How much wheat is raised there?
5. Why is wheat important? How important?
6. Describe the cultivation and harvesting of wheat.
7. What is a reaper? A harvester? A tractor? A threshing machine? For what is each used?
8. What is the use of elevators? Where are they found? Why? Why are they called "elevators"?
9. Through what ports is wheat exported? On a map follow the wheat in its journey from the wheat field in Red River Valley to Liverpool or Havre.

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QUESTIONS ON THE FILM

1. Why is so much machinery needed on a modern wheat ranch? Name eight labor-saving machines shown in the film?
2. What is the arrangement of the plows? Why?
3. Describe the drilling machine? What are the advantages of drilling over broadcasting?
4. What is the function of the large paddle-wheel device on the reaper? Are the sheaves tied by hand? Name the different ways in which wheat may be harvested.
5. In what form does the grain enter the threshing machine? How does it leave? How many men does it take to run such a machine?
6. What is a caterpillar tractor? How does it move?
7. At what points between the growing stalk and the flour mills is the grain touched by hand?
8. What is the purpose of a grain elevator? Where are they located?
9. Name the operations in the raising of the wheat and the steps in the delivery to the flour mill.
10. Describe the method of loading a grain vessel.
11. How is the grain removed from the vessels? Give a number of characteristics of the Lake grain steamers.

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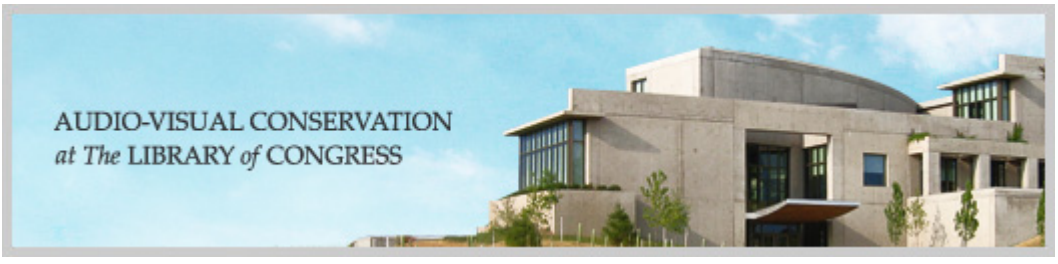

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